

# **Potentially Acceptable Thermal Brines and Ice Slurry Mixtures. Present State and Thermophysical Property Needs**

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Due to the concerns regarding the impact of using fluorocarbon refrigerants and their effects when released to the atmosphere because of their Global Warming Potential (GWP), research and development efforts in refrigeration are looking for a long-term option. The refrigeration and air conditioning systems with non-fluorocarbons like hydrocarbons, ammonia, water, or carbon dioxide would be from an ecological and system view the optimum. The use of indirect refrigeration systems in the world is dramatically increasing. The choice of a secondary fluid is of great importance. When introducing secondary fluids, it is important to evaluate physical properties, especially the environmental and safety impact of chemicals, and the material compatibility. This paper deals with the present uses of secondary refrigerants like calcium brine, propylene, ethylene glycol, trichloroethylene, glycerol, ethanol, Dow therms, Neogel, d-limonene, potassium salts of formic acid, liquefied carbon dioxide, and others. The introduction of liquid/solid mixtures is presented as an alternative to the widely available single-phase coolants (brines). Thermophysical properties for these fluids are analyzed. Most essential are the density, thermal conductivity, thermal capacity, enthalpy, and viscosity of the mixtures for different concentrations.